

# Viewpoint: Open is an Opportunity and a Choice

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*Open access (OA) has fundamentally changed how journal articles are read and distributed. In this article the author describes the spectrum of open access from simply free-to-read to full reuse and derivative rights. As an independent society publisher, JBC has crafted journal policies in a way that reflect our professional values in promoting scholarly research while respecting authors' rights to choose their level of openness and control their works.*

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## OPEN ACCESS

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Open access (OA) has fundamentally changed how journal articles are read and distributed, by offering an alternative to the dominant subscription-based publishing model. Open-access describes the free, immediate, online availability of research articles, combined with the rights to use and share these articles fully in the digital environment. The impetus behind open access is twofold: 1) the public wants free unrestricted access to the results of government-funded research supported by their tax dollars, and 2) authors and research funders want wide dissemination, visibility, and impact of their research findings. Journal publishers have long served the scholarly community as the middlemen by providing authors and readers with the production, peer-review, and distribution and archiving platforms for the scientific literature. In exchange, authors transfer their copyrights to be published and readers pay subscription fees for access. Open access reverses this relationship, whereby authors retain copyrights to their articles and often pay a fee to publish their work, so it is freely available to any reader on the Internet.

In general, open access comes in two forms:

- **Gratis OA** refers to making a work available online free of charge by removing subscription cost barriers (also called *public access*). Gratis access is compatible with an all-rights-reserved copyright, which allows no uses beyond fair use.
- **Libre OA** refers to making a work available online free of charge and permitting reuse rights by removing most permission barriers (also called *full open access*). Libre access is often granted through a Creative Commons license allowing users to copy, redistribute, and adapt a work as long as they provide attribution to the original. Most funding agencies require Libre OA.

Authors today are faced with a complexity of choices and rules related to open access, open data, content mining, and Creative Commons licensing. Small, independent publishers like the *Journal of Biocommunication* (JBC) struggle to offer authors the exposure and resources of large commercial publishers; we suffer from a lack of scale, narrow readership, and perhaps isolation. Yet there are opportunities to glean the best of what open access offers. JBC can increase discoverability and readers of our scholarly research, leverage the interoperability of open source journal platforms, support our authors with better metrics to track the impact and citation of their articles, and respect the intellectual property of our authors to retain and license their copyrights as they desire.

## Background on open access

Open access is becoming more prevalent as funding agencies and universities mandate policies requiring that publications resulting from the research they support be made freely available. The NIH Public Access Policy, enacted in 2008, was the first legislated policy granting the public access to the published results of NIH-funded research (NIH 2008). It requires scientists to submit final peer-reviewed journal manuscripts that arise from NIH funds to the PubMed Central repository upon acceptance for publication. In 2013, the Obama administration issued a policy directive instructing all agencies that grant \$100 million or more per year to develop public access plans to the results of federally funded research. While much research and scholarly authorship is not publicly funded, it is important to note that open access is employed differently across disciplines (e.g., humanities vs. sciences).

Numerous governments, universities and foundations have issued their own open-access mandates — Canadian Institutes of Health Research, Research Councils UK, Wellcome Trust, Howard Hughes Medical Institute (HHMI), Harvard / MIT Universities, and the Bill and Melinda Gates Foundation — to name a few. The Registry of Open Access Repository Mandates and Policies (<http://ROARMAP.eprints.org>) is a database of universities, research institutions, and research funders that require or request their scientists to provide open access to their peer-reviewed research articles by depositing it in an open-access repository. Some funders and journals also require the sharing of datasets on which published results are based in order to encourage transparency, reproducibility, and additional discoveries.

Producing and publishing high-quality, peer-reviewed articles is not without cost, and experimentation with business models is evolving. In response to open access mandates and policies, publishers adopted embargo periods that delay public access for 12 months, allowing them to earn some revenue when an article is first released before giving long-term public access. Some advocates believe a 12-month delay is too long and slows the progress of science. In response, publishers implemented Article Processing Charges (APC) to provide immediate open access of an article. The APC fee covers the publisher's costs for services that can no longer be recouped through subscriptions. These fees vary widely depending on the prestige of the journal (average \$660, range \$8 - \$3900) (Van Noor den 2013). APC fees, which are often paid by the funding grantor or the author's institution, have raised important questions about the influence of money into the system of peer review and acceptance of papers. It has spawned a dark side of predatory publishers that capitalize on the author-pays-to-publish business (Butler 2013, Beall 2016).

There are several options for publishing articles open access:

- **Gold OA** are peer-reviewed journals in which all articles are free to read immediately upon publication. Often, the author pays an APC fee to publish, but not always. A plethora of Gold OA journals (e.g., *PLOS*, *eLIFE*, *PeerJ*) have evolved to serve the author-pays model with widely variable copyright licenses, peer review standards, solicitation practices, and article processing fees. The Directory of Open Access Journals (<http://DOAJ.org>) lists peer-reviewed open access journals.
- **Green OA** are repositories in which an author deposits a version of their research paper in an online archive, prior to submission (preprint) or after its published embargo period (post print) (also called self-archiving). Most subscription journals give permission for authors to deposit their peer-reviewed manuscripts in OA repositories, like PubMed Central. Green OA archives at institutions can also host content not published in journals, such as posters, conference presentations, theses and dissertations. The Directory of Open Access Repositories (<http://ROAR.eprints.org>) lists the attributes of various university and discipline repositories.
- **Hybrid OA** characterizes those subscription-based, peer-reviewed journals that offer open access articles alongside their subscription content. Many hybrid journals are long-standing, prestigious journals that have policies granting authors permission to self-archive (green OA) and an option to purchase open access for a fee (gold OA). Hence hybrid journals are subscription + green + gold. This model enables authors to publish their OA-mandated research in niche high-impact specialty journals.

The profit-driven business of scholarly publishing is at the heart of the OA movement and the discord between libraries and publishers. Some in the scholarly community feel that the large profits paid to commercial publishers go to shareholders,

rather than being reinvested back into science or education. But make no mistake — OA is here to stay. What remains unclear is the cost of knowledge: specifically how to balance the interests of funders, authors, publishers, universities, and the public in a financially sustainable manner that preserves the integrity of the scholarly record.

### **An opportunity for greater discoverability of the *JBC***

The volume of published knowledge is growing exponentially — faster than anyone can possibly read — and faster than any library budget can purchase. The role for trusted peer-reviewed journals has never been more important: that is, to filter the signal from the noise and certify quality findings.

The *JBC* has a longstanding history of curating the scholarly record in visual communication of science. The BioCommunications Association (BCA) first published the *Journal of the Biological Photographic Association (JPBA)* in 1931. In 1974, the *JPBA* merged with the *JBC*, combining the publishing interests of both the AMI and BCA. In 2003, the *JBC* moved to an online subscription-based format to reduce printing costs and enable display of media-rich content. Yet, the migration from print to digital came with costs in ever-changing technology and data platforms that have proved difficult to keep pace with. Since 2004, *JBC* articles have not been indexed in PubMed.

Today journal articles are formatted in XML and tagged with metadata. Every article has a DOI (digital object identifier), and funders and authors are registered with CrossRef.org. This machine-readable metadata enables discovery in search engines such as PubMed and Google Scholar. In a forward thinking decision, the *JBC* transitioned from a static HTML website to the Open Journal Systems (OJS) platform in 2015. OJS is an open source publishing system with an integrated online submission process, XML article production, CrossRef integration, and platform hosting. This monumental move will bring the *JBC* up to current day technology, affording us the scale of larger publishers on the shared platform of numerous other open access journals.

### **Amplifying the research of visual communication in science**

Discoverability and wider dissemination with free public access is an immense opportunity and a necessary evolution for the future viability of the *JBC*. The methods and tools for visual communication in science are interdisciplinary. One need only to look outside the AMI, BCA, and ABCD at the proliferation of conferences (VIZBI, Gordon Research Conferences on Visualization in Science and Education, Games for Health, Graphic Medicine) and the competitive journals (*Nature Methods*, *Journal of Molecular Graphics and Modeling*, *Journal of Visual Communication in Medicine*) to glimpse the scope of scholarly work that the *JBC* might attract from both readers and authors.

Publishing and sharing scholarly information freely online increases collaboration, innovation and advancement of scientific knowledge. The benefits of OA to authors include:

- High visibility of their work as all articles are made freely available online immediately upon publication;
- Easy compliance with open-access mandates, including CC BY licensing when desired or required;
- Immediate deposit of final article in any repository;
- Retention of copyright by authors and a choice of licensing for reuse and derivatives;
- Assignment of digital object identifiers (DOI) and automatic indexing in PubMed and Google Scholar; and
- Increased citation and readership of their work.

### How open do we go?

Small independent journals, which are funded by their societies, provide an important niche in scholarly publishing. Revenue generation has never been the goal of the JBC. Rather the sustainability and discoverability of our professional research are the primary aims. A personal subscription to the *JBC* has always been included with a membership to the AMI, BCA or ABCD. Making the *JBC* free to read and publicly accessible supports the missions of her association publishers.





In 2010, the *JBC* issued a Special Issue: Artists' Rights (36-1) and made the articles free to read and download. Analysis of the *JBC* website analytics show the articles in issue 36-1 were the most widely read and continue to be some of our highest ranked articles published. This early effort at wide dissemination through free public access bolsters my belief that all the *JBC* articles should be free to read and shared with

our interdisciplinary colleagues.

Yet, the term "open access" has many implications and meanings. The accepted definition is based on three published statements known as the BBB (Budapest, Bethesda, Berlin) Open Access definition:

*"Scholarly literature that is freely availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited."* (Suber 2015)

Open access journals and repositories have varying levels of openness, ranging from just free-to-read, to allowing full reuse, remix, and derivative works. The spectrum of open access includes core components related to readership, reuse, copyright, posting and machine readability (Figure 1) (SPARC, 2014). OA is driving the use of Creative Commons' licenses over traditional copyright licenses. Many funders and Gold OA journals require use of the CC BY license (attribution only) while others accept CC BY-NC-ND (attribution, noncommercial, no derivatives).

ACCESS	READER RIGHTS	REUSE RIGHTS	COPYRIGHTS	AUTHOR POSTING RIGHTS	AUTOMATIC POSTING	MACHINE READABILITY	ACCESS	
 OPEN ACCESS	Free readership rights to all articles immediately upon publication	Generous reuse & remixing rights (e.g., CC BY license)	Author holds copyright with no restrictions	Author may post any version to any repository or website with no delay	Journals make copies of all articles automatically available in trusted third-party repositories (e.g., PubMed Central, OpenAire, institutional) immediately upon publication	Article full text, metadata, supporting data (including format and semantic markup) & citations may be accessed via API, with instructions publicly posted	 OPEN ACCESS	
	Free readership rights to all articles after an embargo of no more than 6 months	Reuse, remixing, & further building upon the work subject to certain restrictions & conditions (e.g., CC BY-NC & CC BY-SA licenses)	Author retains/publisher grants broad rights, including author reuse (e.g., of figures in presentations/teaching, creation of derivatives) and authorization rights (for others to use)	Author may post some version (determined by publisher) to any repository or website with no delay	Journals make copies of all articles automatically available in trusted third-party repositories (e.g., PubMed Central, OpenAire, institutional) within 6 months	Article full text, metadata, & citations may be accessed via API, with instructions publicly posted		
	Free readership rights to all articles after an embargo greater than 6 months	Reuse (no remixing or further building upon the work) subject to certain restrictions and conditions (e.g., CC BY-ND license)	—————	Author may post some version (determined by publisher) to any repository or website with some delay (determined by the publisher)	Journals make copies of all articles automatically available in trusted third-party repositories (e.g., PubMed Central, OpenAire, institutional) within 12 months	Article full text, metadata, & citations may be crawled without special permission or registration, with instructions publicly posted		
	Free and immediate readership rights to some, but not all, articles (including "hybrid" models)	Some reuse rights beyond fair use for some, but not all, articles (including "hybrid models")	Author retains/publisher grants limited rights for author reuse (e.g., of figures in presentations/teaching, creation of derivatives)	Author may post some version (determined by publisher) to certain repositories or websites, with or without delays	Journals make copies of some, but not all, articles automatically available in trusted third-party repositories (e.g., PubMed Central, OpenAire, institutional) within 12 months	Article full text, metadata, & citations may be crawled with permission, with instructions publicly posted		
	Subscription, membership, pay-per-view, or other fees required to read all articles	No reuse rights beyond fair use/dealing or other limitations or exceptions to copyright (All Rights Reserved)	Publisher holds copyright, with no author reuse beyond fair use	Author may not deposit any versions to any repositories or websites at any time	No automatic posting in third-party repositories	No full text articles available for crawling		
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**Figure 1.** Using the HowOpenIsIt? Open Access Spectrum Guide, the policies of the JBC are circled in red indicating its openness in respect to reader rights, reuse rights, copyrights, posting policies, and machine readability for text and data mining. Adapted from HowOpenIsIt? version 2.0, © 2014 SPARC and PLOS, licensed under CC BY.

These changes are affecting how artists and photographers create and license figures to authors and publishers as part of their day-to-day work with scientists. As the creators of visual content for journals, illustrators and photographers have different perspectives on how free reuse and derivative uses may affect the integrity of their creative works as compared to the benefits of open access to the scholarly community as a whole. Surveys show that authors prefer some control over derivative and commercial uses of their images and articles to protect their reputation and rights (Crotty 2013). The impact on the loss of control over one's reputation or creative work is not the only concern. The forfeiture of future licensing revenue forecloses many from open access. Importantly, it is simply not a sustainable business model for visual artists that are self-supporting small businesses.

The *JBC* belongs to us. Our independence gives us the latitude to craft journal policies in a way that reflect our professional values in promoting our scholarly mission, while respecting the intellectual property of authors. The *JBC* will no longer require authors to transfer copyright of their published contributions. *JBC* has wisely offered authors a choice of licensing: 1) a traditional license to publish that allows authors to reuse their papers in their future printed work without first requiring permission from the *JBC*; or 2) a Creative Commons license for authors who desire or require such licensing to meet a funder or university OA mandate. In this spirit, the *JBC* supports open science initiatives and enables authors to share and choose their level of openness. In contrast, non-scholarly content, such as award-winning images and animations in the *JBC* Galleries and Showcases, will be excluded from PubMed indexing and displayed under express author permissions.

### An open call to scholarship

Professor Linda Wilson-Pauwels delivered an AMI Presidential speech in which she chronicled the process by which a trade or occupation becomes a true profession of the highest integrity and competence. "*The 4th step in the process of Professionalization is a published body of knowledge ... [JBC] publications are for members of other disciplines so that they will take note of the scholarly foundation of our work.*" (Wilson-Pauwels 2011)

It is with a fervent call for papers that I invite photographers and artists in the service of science to submit their novel techniques and methodologies to the *JBC*. Support of your profession's journal elevates our intellectual rigor and our collective careers. Avail yourself of the new open platform and help build wider audiences as we share and build upon the foundation and future success of the *Journal of Biocommunication*.

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